duced by a unit resulting from the colony-formation of the unit of the preceding period. The units are the chromidial, the cellular, the gastraeal, the annelidian, and the simian or anthropoid. At all stages there is continuity of structure, secured by the linin-filaments; the successive colony-formations are true structural integrations. When, however, we come to man, we reach the limit of this morphological integration; human societies or colonies are made up of separate colony-units, of separate men and women. Yet the principle remains the same; for the essential factors in the evolutionary process are the stimuli transmitted by the network; and if we can find transmission of stimuli between the members of human society, we have a right to speak of social integration. Now such transmission occurs, indirectly, by speech and gesture; but it also takes place directly, by telepathy; "on the failure of the primitive linin-network to embrace and tie the human aggregates together, the psychic counterparts of the nerve energies have become the chief factor in connecting the units." So we are necessarily led to consider the part played by the psyche in organic evolution; and the author concludes that it "does not take part in the actual machinery as any primary essential part of the mechanism, but, as the machinery becomes complicated, it plays an important part in simply heightening or dampening down the stimulus." At the same time, the psyche, having emerged, fills a larger and larger portion of man's life, and the life of the future will probably be "the result of the interplay of the specially developed psychic organism with a psychic environment." Even, then, if further morphological transformation is impossible, we have every reason to think that a sixth period will start on a higher level of life, altogether beyond our present comprehension.

It is something of a relief to turn from these highly speculative discussions to the inductions and experiments of Professor Punnett's *Mendelism*. The book, which is written in a style as popular as the subject allows, consists of fifteen chapters: the Problem, Historical, Mendel's Work, the Presence and Absence Theory, Interaction of Factors, Reversion, Dominance, Wild Forms and Domestic Varieties, Repulsion and Coupling of Factors, Sex, Intermediates, Variation and Evolution, Economical, Man. The treatment offers, if compared with Mr. Bernard's work, a good illustration of the difference between hypothesis and speculation. The *Mendelism* may be cordially recommended, as an admirable introduction to the present problems of heredity: aside from a slip in botanical nomenclature (p. 2 and elsewhere), there is little if anything for the critic to carp at. The final chapter, with its remark that "the analysis of mental characters will no doubt be very difficult," is a direct challenge to the experimental psychologist.

On Certain Electrical Processes in the Human Body and their Relation to Emotional Reactions. By F. L. WELLS and A. FORBES.

An Empirical Study of Certain Tests for Individual Differences. By M. T. WHITLEY.

Archives of Psychology, nos 16, 19. New York. The Science Press. 1911. pp. 39; iii., 146.

Both of these Studies contribute to our knowledge of problems that are at present under general discussion. The work of Messrs. Wells and Forbes appears almost at the same time with that of Radecki in the *Archives de Psychologie;* and it is reassuring to find a substantial

agreement in results. Wells and Forbes refer the psychophysical galvanic reflex to "the secretion of sweat, which manifests itself physically in two ways, by changing the electrical potential of the surface of the body and by lowering the resistance of the skin." Radecki finds, similarly, a change of potential at the surface and an increased conductivity of the body as a whole; he refers the former to secretory, the latter to circulatory changes; but he adds that the two physiological processes are interdependent, to the extent that each one may be the indirect cause of a physical phenomenon depending directly on the other. Wells and Forbes say that "as an objective criterion of emotional reaction, the electrical reflex appears distinctly superior to any analogous procedure as yet developed;" they add, however, that variations in the susceptibility of a given individual at different times are hardly less than those between different individuals. Radecki also concludes that the reflex is the most delicate test of the emotive factor in mental processes as yet discovered; and he appends a like qualification, though the conditions of his work lead him merely to restrict the application of the test to the individual. It is clear, then, that we are well on the way towards an understanding of the reflex and that, with the improved methods and instruments now becoming available, we may hope to secure a reliable objective index of the presence of affective processes in consciousness.

Miss Whitley reports 45 tests on 3 to 7 subjects, discussed with a view to correlation, change under brief practice, and reliability of the single trial; and 5 very different tests on 9 subjects, discussed from the point of view of change by practice (of the adequacy of 'mean curves' for tests and for persons subjected to them). On the basis of these results, she considers a number of objections raised against various modes of test-procedure. (1) 'A simple test tells us very little of its subject.' But descriptive notes may be taken during performance, and careful selection will render even a simple test significant. (2) 'A single trial is unreliable.' True: not only because of its singleness, but also because of other, variable factors. Few tests frequently administered give the best estimate of the individual and the best basis for comparison. (3) 'The result of the first few trials measures, not the function under test, but adaptability to novel conditions.' The objection is not of weight. (4) 'Tests measure previous similar experience rather than actual capacity.' But this holds of all mental measurement; and the inference is, simply, that tests should be repeated at stated intervals. (5) 'Results are misleading.' True, if only one form of measurement is employed; not if the measurements are treated in various possible ways. (6) 'Practice is individual, both for person and for process tested.' But there is a general law of improvement; and characteristic variability or consistency of performance is precisely what the tests will disclose.

L'Analyse physiologique de la perception. Par E. ABRAMOWSKI. Collection de psychologie expérimentale et de métapsychie, xx. Paris, Bloud et Cie. 1911. pp. 120.

Every 'state of consciousness,' the author tells us, is correlated with 'a group of active physiological elements, nervous and other.' Thus the unitary 'state of consciousness' that we call the visual perception of an object is correlated with a group of sensorial elements, peripheral, subcortical and cortical, whose activity conditions the externalised totality of sensible qualities; a group of mnesic elements in the frontal lobes, which give recognition, make the object par-